

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property
Organization
International Bureau



(43) International Publication Date
30 June 2005 (30.06.2005)

PCT

(10) International Publication Number
WO 2005/058115 A1

(51) International Patent Classification⁷: **A47K 13/14**

(21) International Application Number:
PCT/KR2004/001085

(22) International Filing Date: 11 May 2004 (11.05.2004)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
10-2003-0093456 18 December 2003 (18.12.2003) KR
10-2004-0017957 17 March 2004 (17.03.2004) KR

(71) Applicant and
(72) Inventor: **PARK, In-Ku** [KR/KR]; 104-3002 Huyn-dai
I-Park, 9 Jeongja 1-dong, Bundang-gu, Seongnam-si,
Gyeonggi-do 463-811 (KR).

(74) Agents: **CHOI, Sung-Woo** et al.; 197-19 Nonhyun-dong,
Gangnam-Gu, Seoul 135-010 (KR).

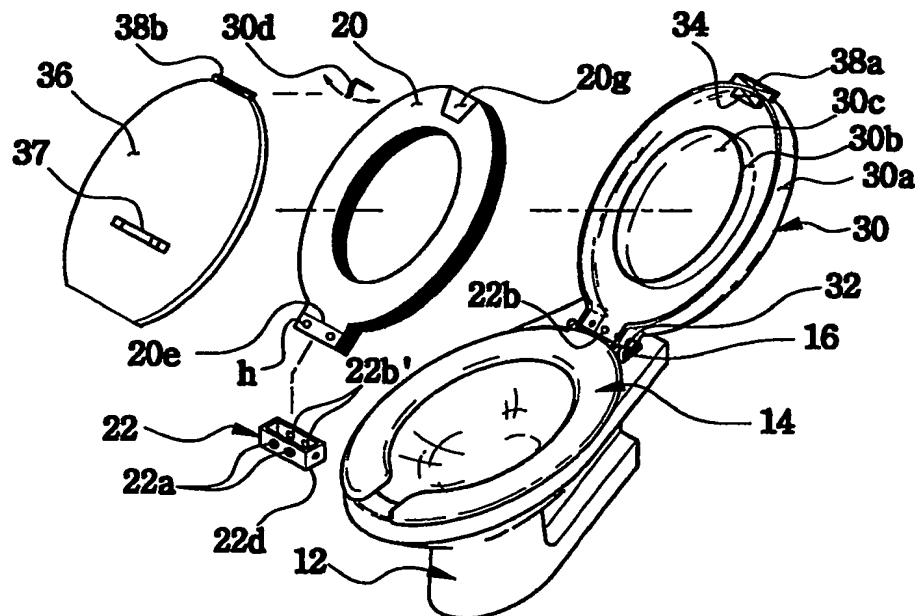
(81) Designated States (*unless otherwise indicated, for every kind of national protection available*): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(84) Designated States (*unless otherwise indicated, for every kind of regional protection available*): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:
— with international search report

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: THE SANITARY SEAT COVER ASSEMBLY FOR TOILET BOWL



(57) Abstract: The invention relates to a sanitary seat cover assembly to cover the surface of a seat with a clean sanitary seat cover at every use, the sanitary seat cover assembly comprising: sanitary seat covers having a body part that covers the upper surface of the seat with a predetermined area range and a neck part extended and protruded correspondingly to a portion where the seat is hinged from the body part; a cramp for selectively fixing the neck part of the more than two sanitary seat covers piled and overlapped one another at a portion where the seat is hinged; and a supporting frame for maintaining the shape of the sanitary seat covers.

WO 2005/058115 A1

THE SANITARY SEAT COVER ASSEMBLY FOR TOILET BOWL

Technical Field

The present invention relates to a sanitary seat cover assembly for a toilet
5 bowl where a new clean sanitary seat cover can be in use whenever a person's
body is in contact with the surface of a seat of the toilet bowl.

Background Art

In general, a toilet bowl has a structure in which a seat of the toilet bowl
10 can be liftable to be in correspondence with a user's position, either standing or
sitting.

At this time, the seat may be a medium to transfer various infectious
germs like bacteria or virus as any person can use the seat. Besides, some
harmful matters to irritate people's skin like cleansing detergents may remain on
15 the surface of the seat. Because of such reasons, most users doubt the sanitation
on the seat of the toilet bowl. In order to alleviate such untidiness or discomfort
in uses of the toilet bowl, some users wipe or cover the surface of the seat with
tissues.

The prior art in order to reduce the aforementioned inconvenience was to
20 provide a plurality of sanitary seat covers tailored in the same shape as the seat
of the toilet bowl. A user should take out one of the sanitary seat covers, put it
on the surface of the seat of the toilet bowl and sit on it. In the prior art, the user
is required to make an effort to arrange the sanitary seat cover precisely on the
surface of the seat. In addition, the user should take a careful step to prevent the
25 sanitary seat cover from sliding into the toilet bowl while sitting on it.

On the other hand, as another prior art in order to solve such
inconvenience, there has been disclosed a structure having an adhesive
interposed between the surface of the seat and the sanitary seat cover facing it.

But, in this structure, it is difficult to separate the sanitary seat cover from the adhesive on the surface of the seat of the toilet bowl. The adhesive force may be weakened due to the repeatedly use of the adhesive against a plurality of sanitary seat covers in subsequent uses. There was another problem of causing physical displeasure to a user's skin with the presence of the adhesive and foreign matters stuck on the adhesive. Furthermore, since the adhesive is applied to one side of the surface of the sanitary seat cover, there were problems of increasing the processing steps and the manufacturing cost.

Another structure to prevent the slide-off of the sanitary seat cover is to make the sanitary seat cover enlarged greater than the surface of the seat with the extra portion of the sanitary seat cover fixed between the lower side of the seat and the upper body portion of the toilet bowl. According to the aforementioned structure, there were inconvenient required steps of arranging the sanitary seat cover with care, lifting the seat and inserting the extra portion to the respective positions.

On the other hand, the toilet bowl is generally placed in a rather wet environment and washed with water and cleansing solution. The sanitary seat cover is usually made of paper that is easily transformed by moisture. Therefore, the sanitary seat cover should be stocked over the height of the toilet bowl so as not to contact with water. Besides, the user should take steps of withdrawing one sanitary seat cover from the storage case, arranging the withdrawn sanitary seat cover correspondingly to the seat and re-fixing them together. While a sanitary seat cover is withdrawn from many orderly piled and overlapped sanitary seat covers in the storage case, one or more sanitary seat covers may be taken out thereby bring about unnecessary waste.

Disclosure of the Invention

It is an object of the present invention to solve the aforementioned

problems and provide a sanitary seat cover assembly for a toilet bowl that prevents damage of moisture while storing a pack of a plurality of sanitary seat covers close to the toilet bowl.

It is another object of the present invention to provide a sanitary seat cover
5 assembly for a toilet bowl that improves convenience in use by letting a sanitary seat cover withdrawn from a storage case accommodating a plurality of sanitary seat covers set up properly at the surface of the seat of the toilet bowl.

It is still another object of the present invention to provide a sanitary seat cover assembly for a toilet bowl that can reduce unnecessary waste by letting
10 only one sanitary seat cover utilized at each occasion.

Brief Description of the Drawings

Fig. 1 is a perspective view illustrating a general toilet bowl;

Fig. 2 is a schematic plane view illustrating a sanitary seat cover according
15 to the present invention;

Fig. 3 is a cross-sectional view illustrating the state of a withdrawing grip when the sanitary seat covers are mounted altogether;

Fig. 4 is a perspective view illustrating a sanitary seat cover assembly for a toilet bowl according to the present invention;

20 Fig. 5 is a perspective view illustrating an assembled state of the structure shown in Fig. 4;

Fig. 6 is an exploded perspective view illustrating another application of a lid of the toilet bowl illustrated in Fig. 4;

Fig. 7 is a perspective view illustrating an assembled state of the structure
25 shown in Fig. 6;

Figs. 8a through 8c are perspective views illustrating steps of withdrawing a sanitary seat cover in the structure of Fig. 6;

Figs. 9 and 10 are exploded perspective views illustrating respective

applications of the lid;

Figs. 11a through 11c are cross-sectional views illustrating operational relationship in the structure of Fig. 10;

Fig. 12 is an exploded perspective view illustrating another embodiment of
5 the present invention;

Figs. 13 and 14 are cross-sectional views illustrating respective embodiments of the fastening relationships between a supporting frame of a sanitary seat cover and a seat of a toilet bowl shown in Fig. 12.

Fig. 15 is a perspective view illustrating the structure of an embodiment of
10 a guard that supports a sanitary seat cover;

Fig. 16 is a cross-sectional view taken along the line XVI-XVI shown in Fig. 15;

Fig. 17 is an exploded perspective view illustrating a transformed embodiment of a guard shown in Fig. 15; and

15 Figs. 18 and 19 are exploded perspective views illustrating a sanitary seat cover assembly when the sanitary seat cover is folded.

Best Mode for Carrying out The Invention

Hereinafter, according to preferred embodiments of the present invention
20 to accomplish the aforementioned objects, a sanitary seat cover assembly for a toilet bowl, will be described in detail with reference to accompanying drawings.

Fig. 1 is a perspective view illustrating a general toilet bowl, Fig. 2 is a schematic plan view illustrating the shape of the sanitary seat cover according to the present invention, Figs. 3 through 19 are views illustrating sanitary seat
25 cover assemblies according to the respective embodiments including the sanitary cover seat shown in Fig. 2. At this time, parts that perform identical or similar functions in the structure will be represented with identical reference numerals and additional descriptions will be omitted thereto.

First of all, the toilet bowl 10 shown in Fig. 1 has a main body 12 which is connected with a draining device and provided on the floor of a bathroom or restroom. In the upper center portion of the main body 12, a water storage part 12a that is formed in a concave shape and supplies water and shuts the flow of bad odor by getting the passage to the draining device shut with a certain amount of water is formed. A ring shaped seat 14 having a predetermined width is placed onto the external circumference of the top of the water storage part 12a. At this time, the seat 14 is hinged to a hinge part 16 at a rear portion of the main body 12 for lifting. A lid 18 of the toilet bowl is hinged with the seat 14 in the hinge part 16 for selectively covering the top of the seat 14.

As shown in Fig. 2, sanitary seat cover 20, 20' according to the embodiment of the present invention having the aforementioned structure are divided into body part 20a, 20a' shaped to cover the top surface of the seat 14 and neck part 20c, 20c' extended to the direction of the hinged part 16, that is, to the direction of getting the seat 14 hinged from the body part 20a, 20a' to the seat 14.

At this time, the body part 20a, 20a' of the sanitary seat cover 20, 20' has area enough to cover the surface of the seat 14. In addition, the center portion of the body part 20a, 20a' has cut part 20b, 20b' correspondingly to the internal edges of the seat. Such cut part 20b, 20b' has diameter smaller than that of internal edge of the seat 14. In other words, the remaining body part 20a, 20a' other than the cut part 20b, 20b' has shapes to sufficiently cover the surface of the seat 14 with area greater than the seat 14. The cut part 20b, 20b' can be tailored from the body part 20a, 20a' in the course of forming the sanitary seat cover 20, 20'. Furthermore, the cut part 20b, 20b' can be formed with partial cut lines depending on areas to be selected and separated conveniently from the body part 20a, 20a' by a user.

In addition, the body part 20a, 20a' includes withdrawing grip 20g, 20g'

protruded outside from the edge of the body part 20a, 20a'. At this time, it is preferable that the withdrawing grip 20g, 20g' be formed opposite to the neck part 20c, 20c' with respect to the center of body part 20a, 20a'. Moreover, the withdrawing grip 20g, 20g' can be formed in the shape which is extended from the body part 20a, 20a'. Separate grip-shaped ones can be connected to the edge of the body part 20a, 20a'. In addition, as marked with a dot line in Fig. 3, the withdrawing grip 20g, 20g' can be formed with the length extending from the edge of the body part 20a, 20a' to the range of the cut part 20b, 20b'.

On the other hand, as shown in Fig. 2, the neck part 20c, 20c' of the sanitary seat cover 20, 20' have a compressed part 20d, 20d' having its edge and other sanitary seat cover 20, 20' which are bond to each other by sewing or other means. Besides, cutting lines 20e, 20e' are made between the compressed part 20d, 20d' of the neck part 20c, 20c' and the body part 20a, 20a' to separate the body part 20a, 20a' from the compressed part 20d, 20d' with a certain level of pulling force.

Hereinafter, the reference numerals marked with "" in the structure of each sanitary seat cover will be omitted for convenience.

On the other hand, as shown in Figs. 3 through 19, a plurality of the aforementioned sanitary seat covers 20 are piled in the same shape. The piled sanitary seat covers 20 are formed into a pack bound by a general binder 22 to the compressed part 20d.

In the pack of sanitary seat covers 20, each withdrawing grip 20g is tightly stuck to the surface of the extended or connected body part 20a and hidden by the sanitary seat covers positioned in front. As the next withdrawing grip 20g is exposed by separating the sanitary seat cover 20 positioned in front, it becomes possible to withdraw only a single sanitary seat cover. Another structure of such a withdrawing grip (not shown here) may be constructed with a predetermined area of plain paper at the edge of the body part 20a. A general connecting tool

like a hook or string may be used to be in connection with each sanitary seat cover 20 and kept hidden until another sanitary seat cover 20 put in front of it is withdrawn out. Such a pack of sanitary seat cover 20 is connected to the hinge part 16, supported by supporting frames 30, 40, 40', 50, 70 of the sanitary seat covers that cover up the upper portion of the seat 14 in accordance with the rotating position, and maintains its shape.

Now, a description will be made about the structure of each embodiment of a binder 22 that forms a pack of the aforementioned sanitary seat covers 20.

First of all, one embodiment of the binder 22 is constructed with bolts 22a and nuts 22b' compressed and screwed through the sanitary seat covers 20 to the supporting frame 30, 40, 40', 50, 70 with the neck parts 20c of the sanitary seat covers 20 aligned properly. Such a binder 22 may be constructed by forming nuts 22b' on the supporting frame 30, 40, 40', 50, 70 and passing bolts 22a through the pressing part 20d of the sanitary seat covers 20 in opposite to the nuts 22b'. The binder 22 of the bolts 22a and nuts 22b may be also constructed by placing the bolts 22a on the supporting frame 30, 40, 40', 50, 70, screwing the nuts 22b' at the edge of the bolts 22a that pass through sanitary seat cover 20 and forcibly fix the sanitary seat cover 20 between them by applying pressure. At this time, the connection between the bolts 22a and nuts 22b' performs functions of binding the sanitary seat covers 20 and cramping the sanitary seat covers 20 against the supporting frame 30, 40, 40', 50, 70. In addition to the structure of the binder 22, a pressing plate 46 may be included so as to increase the local pressure between the bolts 22a and nuts 22b' to the area range of pressing part 20d as shown in Fig. 18 or 19. As shown in Fig. 2, it is preferable that a through hole (h) to let the bolts pass through the piled state of the pressing parts 20d or a hole (h') cut from the edge may be additionally formed on the sanitary seat covers 20 that correspond to the aforementioned structure of the binder 22 having bolts 22a and nuts 22b.

As shown in Fig. 4, another embodiment of the binder 22 may be constructed with a case 22d where the pressing part 20d of sanitary seat covers 20 is pressed and inserted by a separate gig (not shown here). If the gig is eliminated later, the internal wall of the case 22d will restrict the elastic recovery of the pressing part 20d, thereby resulting in binding with a certain level pressure. In the aforementioned structure, bolts 22a and nuts 22b' may be screwed in the case 22a through which the pressing parts 20d of sanitary seat covers 20 are passed. Even if not shown here, other means like a general band or clip may be used as the binder 22.

On the other hand, the supporting frame 30, 40, 40', 50, 70 for sanitary seat cover 20 may further include a cramp 32 for supporting the neck part 20c of the sanitary seat covers which are bound into a pack. As shown in Figures 4 through 8c, the embodiment of the cramp 32 is illustrated in a structure of pressing or hitching both sides of the pack of sanitary seat covers 20. As shown in Figs. 9 through 11c, 15 and 17, the cramp 32 may be formed into a groove to make the bound portion of the sanitary seat cover 20 inserted in one direction (for instance, from top to bottom). As shown in Figs. 11a through 12, particularly in Fig. 12, the cramp 32 fixed or supported by insertion of the pressing part 20d of sanitary seat covers 20 may be formed with a protrusion protruded from the lateral walls that correspond to the pressing part 20d of sanitary seat cover 20 on the supporting frame 40. The cramping function of the cramp 32 made into a groove or protrusion is to maintain the position of the neck part 20c of sanitary seat cover 20 while each sanitary seat cover is separately withdrawn out to the other direction (for instance, to the front), correspondingly to the seat 14. The neck part 20c of the sanitary seat cover 20 separated from its pack is held by the cramp 30a, and the body part of the sanitary seat cover 20 is arranged onto the seat 14. Besides, the aforementioned cramp 32 has a function of fixing the position of the remaining sanitary seat covers 20 including the neck

part 20c against the physical reaction when the neck part 20c is pulled away along its cutting line after the sanitary seat cover 20 is used.

On the other hand, another embodiment of the cramp 32 has a pressing plate 46 in which the binder is tightly placed to the pressing part 20d of sanitary seat covers 20, which are piled by the binder described above. The cramp of the supporting frame 30, 40, 40', 50, 70 corresponding to the pressing plate 46 is constructed with a band lever having a hook and a lever respectively linked on the lateral walls of the supporting frame 30, 40, 40', 50, 70, where the pressing plate 46 is placed, and the band lever forcibly fixes the pressing part 20d of the sanitary seat cover 20 by getting the linked hook tightly compressing the pressing plate 46 to the supporting frame 30, 40, 40', 50, 70 according to changes in rotational angles of the lever. At this time, the structure of the cramp 32 using the band lever is similar to the art where a binder 22 is generally used for binding sanitary seat cover 20. The structure of the band lever as such will be omitted because the structure is constructed to close a container. Another structure of the cramp 32 may be constructed with a clip (omitted here for simplification of the drawings) that elastically presses the neck part of the sanitary seat cover 20 bound into a pack.

On the other hand, a detailed description will be made about the supporting frame 30, 40, 40', 50, 70 for sanitary seat cover with reference to accompanying drawings of Figs. 4 through 19.

First of all, the supporting frame 30, 40, 40', 50, 70 for sanitary seat cover comprise external frame 30a, 40a, 40a', 50a', 70a' formed in the shape of plates facing one side of a pack of sanitary seat cover to thereby surround the edge of the sanitary seat cover 20. At this time, internal frame 30b, 40b, 40b', 50b, 70b is additionally included in the center of the supporting frame 30, 40, 40', 50, 70 in correspondence to cut center of the sanitary seat cover 20 so as to cover the internal edge of the sanitary seat cover 20. Besides, an internal region formed by

the internal frame 30b, 40b, 40b', 50b, 70b may be used as a accommodation space for various things like cushion, paper, books, newspapers. In addition, one or more hitching jaw 30d may be included on the external frame 30a, 40a, 40a', 50a, 70a or the internal frame 30b, 40b, 40b', 50b, 70b over or beside the supporting frame 30, 40, 40', 50, 70 for supporting the position of sanitary seat cover 20 fixed by a binder. Such hitching jaw 30d is to keep the binding state of sanitary seat cover 20 stuck on the internal surface of the supporting frame 30, 40, 40', 50, 70 while the supporting frame 30, 40, 40', 50, 70 is rotated to cover the top of the seat 14.

10 The structure of the hitching jaw 30d shown in Figs. 4 through 12 may be used as a plate-spring or a general pressing tool (not shown here) using elasticity of a spring while the spring is fixed at the external frame 30a, 50a of the supporting frame 30, 50 to elastically press the surface of the sanitary seat cover 20 correspondingly. In addition, the aforementioned hitching jaw 30d is preferably mounted on the supporting frame 30, 50 for sanitary seat cover. It is preferable that the hitching jaw 30d is constructed to horizontally rotate without disturbance of sanitary seat cover 20. It is preferable that a pushing elastic part 34 be additionally mounted at the internal surface of the supporting frame 30, 50 facing the hitching jaw 30d to make a withdrawing grip 20g continuously remaining in contact with the hitching jaw 30d.

Moreover, it is preferable that furrows f1, f2 be formed to prevent moisture remaining on the lateral walls facing the internal and external edges of sanitary seat cover 20 from being induced inside and getting in contact with the sanitary seat cover 20.

25 On the other hand, as shown in Figs. 4 through 11c and Figs. 18 and 19, the supporting frame 30, 40, 40', 50, 70 additionally include coverlets 36, 36a, 36b, 36c, 36d, 36e to protect sanitary seat cover 20 from outside moisture.

The coverlet 36 shown in Figs. 4 and 5 is shaped in a plate to cover the

front side of the supporting frame 30 and the external edge, where the sanitary seat covers are mounted, and hinged with connectors 38a, 38b at the upper portion of the supporting frame 30. Besides, the coverlet 36 may be made of flexibly bending synthetic resin including vinyl-products and welded to the supporting frame 30.

On the other hand, another coverlets 36a, 36b, 36c, 36d are shown in Figs. 6 through 11c. The first coverlet 36a is fixed to the upper portion of the external frame 40a of the supporting frame 40 to extensively cover up the internal frame 40b with a predetermined area. Besides, the second coverlet 36b is extended to a predetermined width to the external frame 40a along the internal frame 40b of the supporting frame 40. The third coverlet 36c is extended with a predetermined width to the internal frame 40b at both sides of the external frame 40a. In addition to them, the fourth coverlet 36d is extended to the lower portion of the supporting frame 40 from the lower portion of the internal frame 40b. The respectively coverlets 36a, 36b, 36c, 36d are overlapped one another with a predetermined width, and they are made of a flexible material that can be bent when the sanitary seat cover is withdrawn.

Figs. 8a through 8c illustrate the steps of withdrawing a sanitary seat cover 20 in the structure of the coverlets 36a, 36b, 36c, 36d. First of all, a user holds the withdrawing grip 20g stuck or fold and exposed at the surface of the body part 20a of the sanitary seat cover 20 while lifting up the first coverlet 36a and then snatches to the direction of an arrow. At this time, the sanitary seat cover 20 connected to the withdrawing grip 20g passes through the third coverlet 36c while stretching the third coverlet 36c out and transforms the shape of the second coverlet 36b. As shown in Fig. 8b, the sanitary seat cover 20 which is withdrawing is withdrawn through the second and third coverlets 36b, 36c that are opened by the withdrawing sanitary seat cover 20. As shown in Fig. 8c, the sanitary seat cover 20 is arranged in the shape corresponding to the seat 14 of the

toilet bowl 10 through the bottom of the fourth coverlet 36d. In the process of those steps, the aforementioned coverlets 36a, 36b, 36c, 36d are to be recovered to the original shape where all the coverlets are overlapped with a predetermined width. At this time, the portion of the coverlets overlapped one another is
5 naturally tightened to prevent permeation of outside moisture and transformation of sanitary seat covers 20 due to a contact with moisture.

A factor to be considered in the structure of such coverlets 36a, 36b, 36c, 36d is the inconvenience in mounting the sanitary seat covers 20 for replacing to the supporting frame 40. In order to solve such a problem, auxiliary frames 42a,
10 42b may be added detachably in the shape where a cut is made at a certain portion of the external frame 40a that fixes the first and third coverlets 36a, 36b among all the coverlets. Besides, there may be another structure to solve the aforementioned problem by constructing detachably the edge of the external frame 40a against the supporting frame 40. There may be still another structure
15 to solve the aforementioned problem by constructing the external frame 40a having the first and third coverlets 36a formed detachably against the supporting frame 40.

Figs. 9 through 11c are modified embodiments where sanitary seat cover 20 is easily mounted to the structure of the coverlets 36a, 36b, 36c, 36d.

20 Above all, as shown in Fig. 9, an auxiliary frame 42a shaped with a cut in its thickness to the direction of the piled sanitary seat cover 20 placed on the supporting frame 40' may be constructed to be attached or detached from the external frame 40a'. In such an auxiliary frame 42a, a coverlet 36c' extended and transformed from the aforementioned third coverlet 36c is fixed at both edges of
25 the auxiliary frame 42a. Then, the coverlet 36c' may be selectively fixed at either front or back of the auxiliary frame 42a. Furthermore, the auxiliary frame 42b marked by an imaginary line in Fig. 9 has a separate structure in which the external frame 40a can be attached or detached from the aforementioned

supporting frame 40'. At this time, the coverlet 36c' may be fixed along the front or middle in the thickness direction of the auxiliary frame 42b.

The coverlet 36c' may replace the structure of the aforementioned first, second and fourth coverlets 36a, 36b, 36d because it is extended from the third
5 coverlet 36c to be overlapped at the top and bottom of the supporting frame 40' of the sanitary seat covers 20. At this time, the edge of the coverlet 36c' is preferably made in contact with the lateral wall of the internal frame 40c' mounted at the supporting frame 40. In addition, a guard 48 is separately added at the center of both sides of the auxiliary frames 42a, 42b to expand the area of
10 fixing the coverlet 36c' and to support the position of the sanitary seat cover 20 correspondingly to the rotational position of the supporting frame 40' at the same time. Besides, the guard 48 is formed in an arc so as to minimize the hitching function when the sanitary seat cover 20 is withdrawn out of the coverlet 36c'. At this time, the fixing area of the coverlet 36c' may be restricted to the range of
15 area occupying the guard 48. In addition, the aforementioned auxiliary frames 42a, 42b are preferably made correspondingly to the hinge part 16 or the supporting frame 40' as rotated around the hinge part 16. General connectors 38c, 38d may be additionally included at one or more portions corresponding to the auxiliary frames 42a, 42b and the supporting frame 40' to selectively
20 maintain mutual connection. When the fixing position of the coverlet 36c' is back or middle in thickness direction of the auxiliary frames 42a, 42b, the gap between the front side of the auxiliary frames 42a, 42b and the coverlet 36c' should be as big as an area where the seat 14 can be rotated and inserted.

As shown in Fig. 11a, another factor to be considered in insertion of the
25 seat 14 is to have a distance d between the back edge of the seat 14 from the hinge part 16 and the position of the pressing part 20d of sanitary seat cover 20. When the sanitary seat cover 20 is formed with an area identical to the seat 14, the distance d brings about a result of exposing the front side of the seat 14 and

the back of the internal edge of the seat 14. Therefore, the sanitary seat cover 20 is formed with a range of area further extended in correspondence with the distance d. It is preferable that blinders 44a, 44b extended down from the top of the auxiliary frames 42a, 42b and the bottom of the internal frame 40b' at the position exposed by insertion of the seat 14 into the auxiliary frames 42a, 42b with a certain depth. Then, the internal frame 40b' is constructed to be selectively attached or detached from the supporting frame 40'. General fasteners 46a, 46b are respectively included at the supporting frame 40' and the internal frame 40b' for selective fastening.

10 The structures shown in Figs. 10 through 11c are embodiments of the coverlets 30a, 30b, 36c, 36d of the auxiliary frames 42a, 42b described above. At this time, the first and third coverlets 36a, 36c are fixed along the front and back edge of the auxiliary frames 42a, 42b. Besides, the second and fourth coverlets 36b, 36d are mounted on the internal frame 40b'. As shown in Fig. 11c, 15 the position of the second coverlet 36b on the internal frame 40b' can be elastically recovered as a pack of sanitary seat covers 20 are inserted with a sufficient depth.

Figs. 11a and 11b illustrate steps of mounting a pack of sanitary seat covers 20 shown in Fig. 10. First of all, as shown in Fig. 11a, the auxiliary frames 42a, 42b are released from the supporting frame 40', and the sanitary seat cover 20 is placed to let the fourth coverlet 36d pass through the cut part 20b of the pack of the sanitary seat covers 20. Then, the cut part 20b of the sanitary seat cover 20 is inserted correspondingly into the blinder 44b of the internal frame 40b. As shown in Fig. 11b, the neck part 20c of the sanitary seat covers 20 is fixed by the cramp 32 which is formed on the supporting frame 40'. As shown in Fig. 11c, the top of the sanitary seat covers 20 is inserted into the other blinder 44a of the external frame 40a'. Subsequently, the sanitary seat covers 20 are inserted between the external and internal frames 40a', 40b' to let the second

coverlet 36b pass through the cut part 20b of the sanitary seat covers 20 and be exposed to the front. Then, the auxiliary frames 42a, 42b are fastened with connectors 38c, 38d to the external frame 40a', and the fourth coverlet 36d is protruded to the front of the third coverlet 36c.

5 As compared with it, in the structure where the internal frame 40b' is separable, the neck part of the sanitary seat covers 20 is fixed by the cramp 32 of the supporting frame 40'. Then, a step of inserting the internal frame 40b' into the cut part 20b of the sanitary seat covers 20 and connecting it with the supporting frame 40' and another step of fastening the auxiliary frames 42a, 42b
10 to the external frame 40a' are performed regardless of the sequence. At this time, the first and fourth coverlets 36a, 36d are exposed to the front of the third coverlet 36c; the fourth coverlet 36d is close to the surface of the sanitary seat covers 20 from the innermost side; and the third coverlet 36c is arranged and overlapped at the front of the fourth coverlet 36d with a predetermined width.
15 The positions of all the coverlets are easily recovered during the step of withdrawing a sanitary seat cover 20 positioned to the front. It is preferable that an elastic piece 47 is additionally included on the supporting frame 40', where the withdrawing grip 20g of the sanitary seat cover 20 is position, to push and continue to keep the withdrawing grip 20g protruded from the front, as shown in
20 Figs. 11a through 11c.

On the other hand, as shown in Figs. 12 through 14, the seat 14 is inserted into the supporting frame 50 to prevent permeation of outside moisture. The internal and external edges 50a, 50b of the supporting frame 50 and the seat 14 are combined to maintain the shape of the sanitary seat covers 20 and that of the
25 internal and external edges of the sanitary seat covers 20. The internal and external frames 50a, 50b of the supporting frame 50 for maintaining the shape of the sanitary seat covers 20 are made it possible to let the seat 14 rotated, inserted and attached along the external wall of the internal frame 50b and the internal

wall of the external frame 50a, thereby keeping the sanitary seat covers 20 in a closed state. Fig. 13 is an embodiment of the structure to keep the aforementioned sanitary seat covers 20 in the closed state. The sanitary seat cover 20 should have a seat 14a with durability, strong enough not to get any transformation caused by a load when a user sits on the portion of the sanitary seat cover 20 on the main body 12 of the toilet bowl. It is preferable that the internal and external edges of the seat 14a are greater in width than the internal gap of the seat 14a, wide enough to be stretched to the edge of the internal and external frames 50a, 50b of the supporting frame 50. Besides, a cushion part 41a is placed on the seat 14a, as shown in Fig. 13, so that the shape of the cushion part 41a can be flexibly transformed within the range of width to fit between the internal and external frames 50a, 50b of the supporting frame 50 and that the seat 14a including the cushion part 41a is covered with a somewhat soft material of an outer layer part 41b. In the aforementioned structure, the cushion part 41a and outer layer part 41b are inserted into the internal and external frames 50a, 50b of the supporting frame 50, thereby getting tightly stuck to its surface. The state of being tightly stuck plays a function of stopping permeation of any possible outside moisture. At this time, the connection between the seat 14a and supporting frame 50 is elastically transformed while the cushion part 41a of the seat 14a is inserted between the internal and external frames 50a, 50b of the supporting frame 50, thereby forming the tight attachment to its lateral wall. However, such a structure described above may be equipped or constructed differently. The cushion part 41a and the outer layer part 41b are formed in a size of being smoothly inserted into the supporting frame 50, the edge of the seat 14a is tightly stuck to the internal and external frames 50a, 50b of the supporting frame 50. Connectors 38e, 38f are respectively mounted at the edges facing each other for pulling or hitching functions. Besides, when the sanitary seat covers 20 are connected with each other in order to use one by one, the thickness of piled

sanitary seat covers 20 becomes smaller. Therefore, an elastic piece 56e is additionally included at a position of the supporting frame 50 corresponding to the withdrawing grip 20g of the sanitary seat cover 20 to elastically push to the front for easy holding of the withdrawing grip 20g. The aforementioned
5 connectors 38e, 38f may be constructed by screwing with general magnetic, hook button, hook, bolt and nut. On the other hand, the seat 14b shown in Fig. 14 is inserted between the internal and external frames 50a, 50b of the supporting frame 50, and the internal and external edges are formed in a shape of being expanded to a predetermined width, wide enough to reach out
10 correspondingly to the end of the external and internal edges. The aforementioned seat 14b may be generally made in the molding method. At this time, the aforementioned blinders 44a, 44b may be additionally constructed at the internal and external frames 50a, 50b of the supporting frame 50 for sanitary seat covers.

15 Hereinafter, the procedure of utilizing the aforementioned structure will be described. First of all, a user separates the seats 14a, 14b from the supporting frame to sit on. The user pulls the grip of sanitary seat covers 20 exposed outside from the supporting frame 50 and places it on the surface of the seats 14a, 14b at the same time for use.

20 Other factors to be considered in addition to the aforementioned structure are to make an easy process of withdrawing sanitary seat covers 20 one after another while the seat 14 is being separated from the supporting frame 50 and to make a stable support of the remaining sanitary seat covers with the supporting frame 50. Figs. 12 through 17 illustrate the structure of supporting the remaining
25 sanitary seat covers 20 with the supporting frame 50 when a sanitary seat cover 20 is withdrawn out.

Fig. 12 illustrates a structure constructed with one or more hitching jaws 30d on the lateral wall of the internal and external frames 50a, 50b of the

supporting frame 50. Such hitching jaws 30d are to keep the state of supporting sanitary seat covers 20 correspondingly to the rotational position of the supporting frame 40 as described above with reference to Fig. 4.

Figs. 15 and 16 illustrate another structure of supporting the positional state of sanitary seat covers 20 with a guard 64 that is hinged at the hinging portion of the supporting frame 50 and closely placed correspondingly to the edge within a range of not covering the neck part 20c of the sanitary seat covers 20. At this time, a supporting rod 66 to support both guards 64 presses or releases the neck part 20c of sanitary seat covers 20 according to the rotational position to perform a function as a selective binder or cramp. The aforementioned supporting rod 66 may be constructed with elastic means to get the guard 64 connected to the supporting rod 66 in an elastic contact with the supporting frame 50. It is preferable that the guard 64 be constructed to accommodate the seat 14 in the internal side of the supporting frame 50 and restrict its insertion depth. Besides, it is preferable that the supporting rods 66 be constructed to form a gap within a range of preventing the guards 64 from covering the neck part 20c of sanitary seat covers 20 at least. Besides, it is preferable that the guards 64 be constructed to easily withdraw sanitary seat covers 20 by making the area (a1) corresponding to both edges of sanitary seat covers 20 small. Auxiliary guards 64' are additionally mounted at the edges of the internal frame 50b to assist the aforementioned guards 64 to be in correspondence to the area range (a2) around the cut part 20b of sanitary seat covers 20. Furthermore, in order to stably support the sanitary seat cover 20 against the supporting frame 50, jaw 65 is preferably formed at the internal wall of the external frame 50a and the external wall of the internal frame 50b to restrict the rotation of the guards 64. As shown in Fig. 17, the guard 64b has a plurality of edge jaws 65' at both side, and a rubber band, another elastic causing flexible transformation from its specific original one or a wire to be held or hinged to the external frame 50a may be

included between the edge jaws 65'.

On the other hand, as shown in Fig. 18 or 19, in another embodiment of the structure depending on a different shape of the bound sanitary seat covers 20, the sanitary seat covers 20 are piled with its top portion folded with the bottom
5 of the neck part 20c from the center of the body part 20a and with withdrawing grip 20g folded to its opposite direction. The neck part 20c of the piled sanitary seat covers 20 is pressed and fixed by the aforementioned binder 22 as described above. The supporting frame 70 may be formed correspondingly to the half-folded shape of the sanitary seat covers 20. Therefore, the supporting frame 70
10 is divided into two portions, the top of which is preferably used as an accommodating part 70d to store another replaceable pack of sanitary seat covers 20. Besides, a general connector 38g may be additionally included at the top portion to keep storing another replaceable pack of sanitary seat covers in its stored state. In addition, it is preferable that an additional cover 36e be included
15 over the supporting frame 70 to prevent the sanitary seat covers 20 from being exposed outside moisture in the natural environment.

As shown in Fig. 19, according to another shape of a pack of sanitary seat covers 20, both longitudinal sides leading to the neck part 20c and withdrawing grip 20g including the center of the body part 20a are folded each other. At the
20 aforementioned state, the top and bottom portions are folded again. Then, the folded withdrawing grip 20g is exposed from the surface of the sanitary seat covers 20 folded into one quarter of its original shape. The external portion of a plurality of sanitary seat covers 20 are piled and forcibly fixed by the binder.

In the structure described above, the sanitary seat covers 20 may be made
25 of a paper, textile or synthetic vinyl product, and the supporting frame 50 may be replaced with the coverlet of the toilet bowl that covers the top of the seat 14 of the toilet bowl.

As described above, there are advantages in the aforementioned

embodiments of the present invention in that a plurality of sanitary seat covers 20 covering the top surface of the seat 14 are protected from permeation of outside moisture by coverlets 36, 36a, 36b, 36c, 36d, 36e, that the neck part 20c of the withdrawn sanitary seat cover 20 is fixed by a binder to be easily arranged
5 on the surface of the seat 14 and to be easily pulled and cut out along the cut line 20e after use, thereby making the following users replace sanitary seat covers conveniently.

Even though not illustrated in drawings, when the front portion of the seat 14 open-ended, or when the grip part of sanitary seat covers 20 is exposed with
10 the seat 14 tightly stuck to the supporting frame, each sanitary seat cover 20 is withdrawn at the step of separating the seat 14 from the supporting frame 40.

Industrial Applicability

According to the invention, there are effects as follows: a plurality of
15 sanitary seat covers placing over the surface of the seat are prevented from outside frame; each sanitary seat cover is arranged on the surface of the seat because the neck part is fixed by the binder or cramp; the used sanitary seat cover is easily pulled and cut out along the cut line to make other users replace the sanitary seat covers conveniently; the withdrawing grip is provided for
20 sanitary and convenient uses.

CLAIMS

1. A sanitary seat cover assembly for a toilet bowl comprising:

sanitary seat covers having a body part covering along the top surface of
5 the seat with a predetermined area range and a neck part extensively protruded
correspondingly to a portion where the seat is hinged at the body part; and

a supporting frame for maintaining the shape of the sanitary seat covers,
and having a clamp,

wherein the clamp selectively fixes the neck part of a plurality of sanitary seat
10 covers which are piled and overlapped one another at the portion where the seat
is hinged.

2. The sanitary seat cover assembly according to Claim 1, wherein the cramp
has a groove to fit the portion binding the sanitary seat covers from the top in
15 correspondence with the surface of the seat to thereby prevent the sanitary seat
cover withdrawn from the supporting frame from getting out of the set-up
position.

3. The sanitary seat cover assembly according to Claim 1, wherein the body
20 part of the sanitary seat cover is formed in a shape of a plate further expanded to
a predetermined width along the external edge of the seat, and the center part of
the sanitary seat covers is formed in a shape correspondingly to the internal edge
of the seat with a cut line for easy cutting.

25 4. The sanitary seat cover assembly according to Claim 1, wherein the body
part of sanitary seat covers is formed in the shape of a plate further expanded to
a predetermined width according to the external edge of the seat, and a hole is
tailored in the center of the sanitary seat covers in the shape corresponding to the

edge of seat.

5 5. The sanitary seat cover assembly according to Claim 1, wherein the sanitary seat cover further comprises a withdrawing grip which is extensively protruded from the edge of the body part.

10 6. The sanitary seat cover assembly according to Claim 5, wherein in the the sanitary seat cover a plurality of withdrawing grips is bound in a state where the grips are folded at one side of the sanitary seat covers so as to be overlapped.

7. The sanitary seat cover assembly according to Claim 1, wherein the body part has an additional withdrawing grip which is extended and protruded from the surface of the edge of the sanitary seat cover.

15 8. The sanitary seat cover assembly according to Claim 1, wherein the sanitary seat covers are piled with their neck parts bound into a pack with a binder and a cut line is added at the neck part between the portion pressed by the binder and the body part.

20 9. The sanitary seat cover assembly according to Claim 8, wherein the binder is to press and fix the neck part of sanitary seat covers piled by screw-combining with the supporting frame.

25 10. The sanitary seat cover assembly according to Claim 9, wherein a nut is mounted on the supporting frame and a hole or groove is formed at the neck part of the piled sanitary seat covers correspondingly to the nut , and wherein the binder has a bolt that passes through the hole or groove from the opposite side of the nut.

11. The sanitary seat cover assembly according to Claim 10, further comprising a pressing plate for pressing the neck part with a predetermined area range in the position where the bolt is pressed to the sanitary seat covers.

5

12. The sanitary seat cover assembly according to Claim 8, wherein the binder has an opening for insertion in a state where the neck parts of the sanitary seat covers are pressed and a case which fixes the sanitary seat covers in the pressed state by the sanitary seat covers being elastically restored in a natural state.

10

13. The sanitary seat cover assembly according to Claim 8, wherein the binder comprises: a pressing plate to be tightly pressed to the neck part of the piled sanitary seat covers; between a hook and a lever linked from the lateral wall of the supporting frame in correspondence with the set-up position of the pressing plate, a band lever to get the neck part of the sanitary seat covers pressed with the pressing plate corresponding to the rotational position of the lever.

15

14. The sanitary seat cover assembly according to Claim 1, wherein the supporting frame of sanitary seat covers comprises an external frame to cover around the edge of the sanitary seat covers in the shape of a plate facing one side of the sanitary seat covers fixed by the binder.

20

15. The sanitary seat cover assembly according to Claim 14, wherein the external frame is selectively attached or detached from the supporting frame.

25

16. The sanitary seat cover assembly according to Claim 1, further comprising an internal frame at the center of the supporting frame to cover around the internal edge of the sanitary seat covers in correspondence with the shape of the

cut center portion of the sanitary seat covers.

17. The sanitary seat cover assembly according to Claim 16, wherein the internal frame is selectively attached or detached from the supporting frame of
5 the sanitary seat covers.

18. The sanitary seat cover assembly according to Claim 16, wherein the internal region of the internal frame has an accommodating part for accommodating things including a user's back supporting cushion, paper, books
10 or newspapers.

19. The sanitary seat cover assembly, as defined in any one of claims 14 through 17, further comprising a water-stopping groove along the lateral wall circumference in the lateral wall of the internal and external frames in contact
15 with the sanitary seat covers.

20. The sanitary seat cover assembly according to Claim 1, further comprising one or more hitching jaws at the top of the supporting frame in order to fix the positional state of the top of the sanitary seat covers with the cramp.
20

21. The sanitary seat cover assembly according to Claim 20, wherein the hitching jaws are plate springs which press elastically so as to keep the sanitary seat covers tightly stuck to the supporting frame.

25 22. The sanitary seat cover assembly according to Claim 1, further comprising additional coverlets mounted over the supporting frame of sanitary seat covers to selectively cover the external portion of the sanitary seat covers along with the supporting frame, thereby preventing the sanitary seat covers from being

exposed to the outside humid environment.

23. The sanitary seat cover assembly according to Claim 22, wherein the coverlets are formed in the shape of plates to cover to the lateral portion of the edge of the sanitary seat covers including the exposed front portion of the supporting frame and hinged to the top of the supporting frame of the sanitary seat covers.

24. The sanitary seat cover assembly according to Claim 22, wherein the one or more coverlets comprises at least one of films which is made of synthetic resin including a vinyl product and is fixed at the top of the supporting frame which covers up to the lateral portion of the edge of the supporting frame as well as the front portion of the supporting frame of the sanitary seat covers.

25. The sanitary seat cover assembly according to Claim 22, wherein the coverlets comprise four coverlets: a first coverlet fixed at the external frame of the peripheral of the top edge of the supporting frame to extensively cover the internal frame with a predetermined area range; a second coverlet extended with a predetermined width to the direction of the external frame along the internal frame of the supporting frame; a third coverlet extended with a predetermined width to the direction of the internal frame along the external frame at both sides of the supporting frame; and a fourth coverlet extended to the bottom of the supporting frame from the bottom of the internal frame, and wherein respective coverlets are overlapped one another with a predetermined width and are made of a material that can be flexibly transformed when the sanitary seat covers are withdrawn out.

26. The sanitary seat cover assembly according to Claim 15 or 24, wherein the

external frame includes detachably an auxiliary frame whose a portion of depth is cut out in the piling direction of the sanitary seat covers, and the coverlets are fixed along at least one of front, center in the width direction or back side of the auxiliary frame.

5

27. The sanitary seat cover assembly according to Claim 26, wherein the auxiliary frame is rotated around a portion where the supporting frame is hinged.

28. The sanitary seat cover assembly according to Claim 5, wherein the top of
10 sanitary seat covers are folded with its bottom part including the neck part with respect to the center of the body part, and a plurality of withdrawing grips extended from the top edge of the body part are folded to the opposite side with their external portions piled and fixed by the binder.

15 29. The sanitary seat cover assembly according to Claim 28, wherein the supporting frame of the sanitary seat covers is divided into the top and bottom portions correspondingly to the shape of the half-folded sanitary seat covers, the top of which includes an accommodating part to store a bound pack of the remaining sanitary seat covers.

20

30. The sanitary seat cover assembly according to Claim 28, further comprising an additional coverlet on the supporting frame of the sanitary seat covers to protect the sanitary seat covers from the outside humid environment in a natural state.

25

31. The sanitary seat cover assembly according to Claim 5, wherein both longitudinal sides leading to the neck part and withdrawing grip including the center of the body part are folded each other; the top and bottom portions are

folded again at its state; the withdrawing grip is piled to be exposed from the surface of the sanitary seat covers folded in the four divisions; and the external portion of the plurality of the piled sanitary seat covers is pressed and fixed with the binder.

5

32. A sanitary seat cover assembly comprises:

a seat hinged to the back portion of the top of a body part of a toilet bowl to be rotated and placed on the body part;

10 sanitary seat covers having a body part that covers the upper surface of the seat with a predetermined area range and a neck part extended and protruded correspondingly to a portion where the seat is hinged from the body part;

a supporting frame to maintain and support the shape of the sanitary seat covers, and to comprise a cramp hinged with the seat to selectively fix the neck part with more than two sanitary seat covers overlapped and piled at the hinged
15 portion; and

connectors selectively fixed and fastened at the edge of the seat corresponding to the edge of the supporting frame of the sanitary seat covers,

wherein the seat and the supporting frame of sanitary seat covers are tightly placed with the connectors fastened to make a tightly closed atmosphere.
20

33. The sanitary seat cover assembly according to Claim 32, further comprising guards for supporting the edge of the sanitary seat covers correspondingly to the rotation of the supporting frame at the supporting frame.

25 34. The sanitary seat cover assembly according to Claim 33, wherein the guards are formed at the external edge of the positioned sanitary seat covers correspondingly to a predetermined area range and connected to a supporting rod that supports the portion extended to the direction hinged with the supporting

frame to subsequently move and rotate both sides, and

wherein the sanitary seat cover further comprises elastic means at the supporting frame having the supporting rod to provide elasticity when the guards approach elastically to the supporting frame.

1/11

FIG. 1

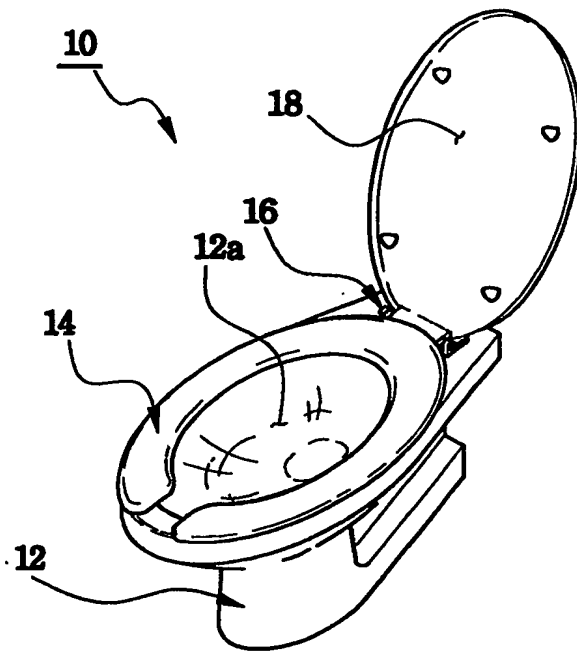
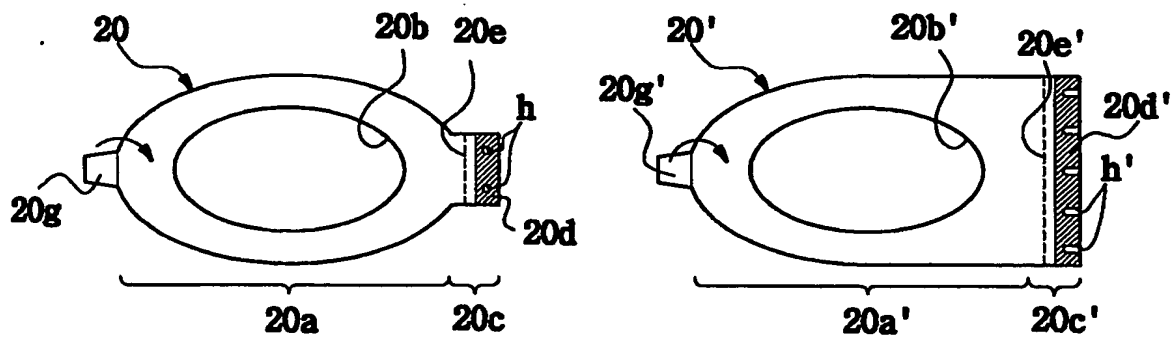


FIG. 2



2/11

FIG.3

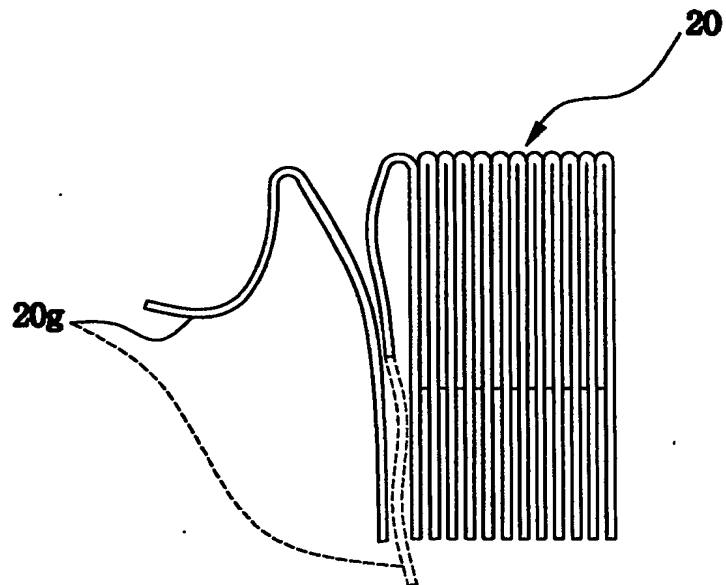


FIG.4

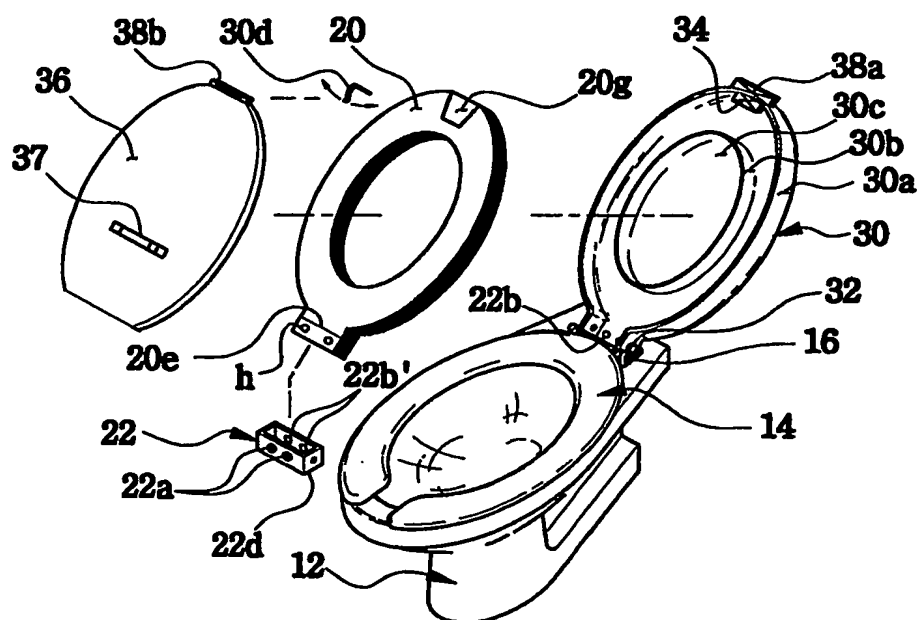


FIG.5

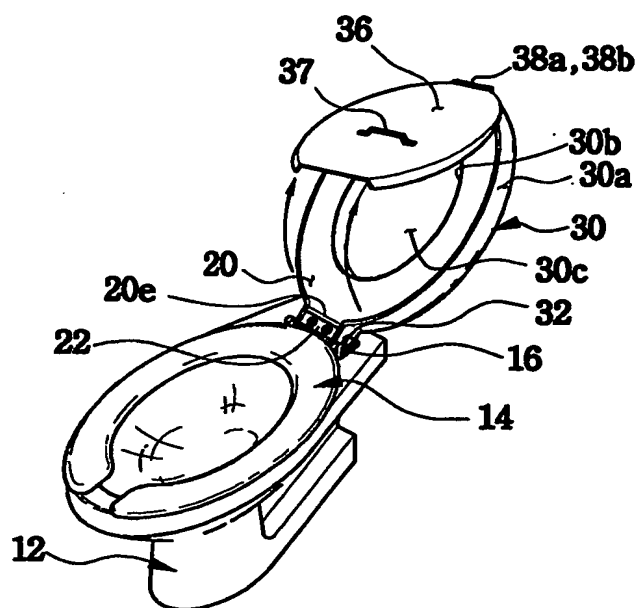
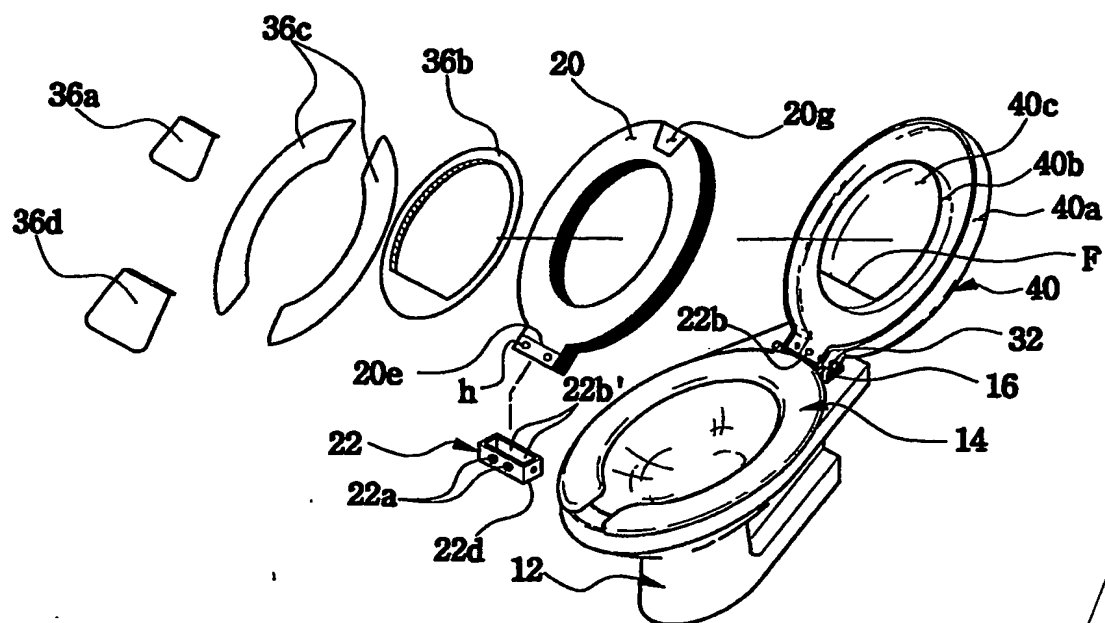


FIG.6



4/11

FIG.7

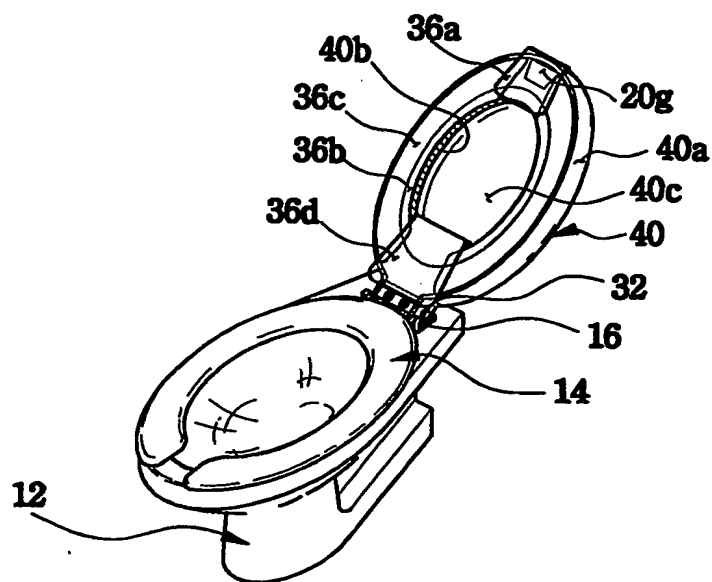
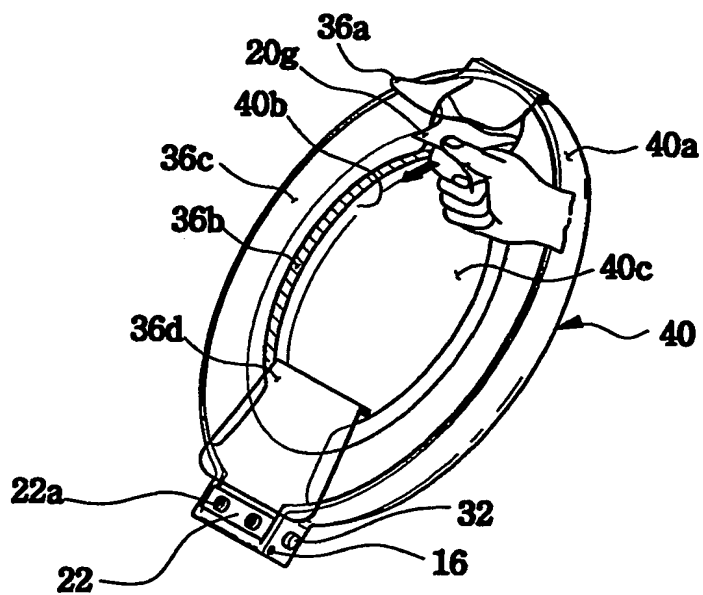


FIG.8a



5/11

FIG.8b

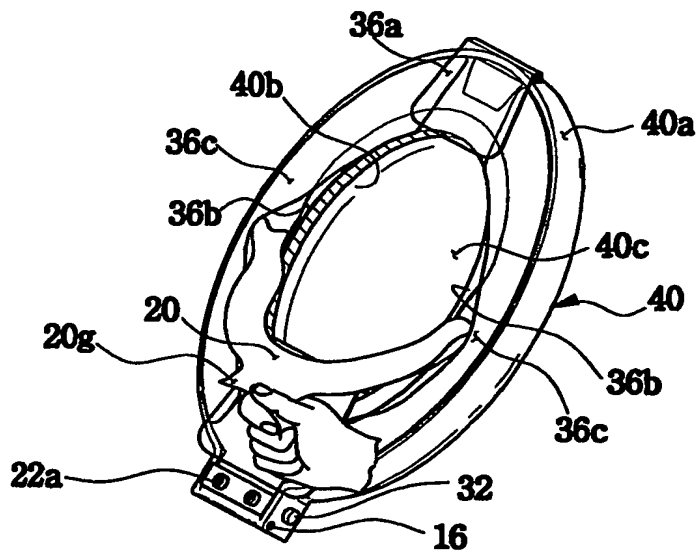


FIG.8c

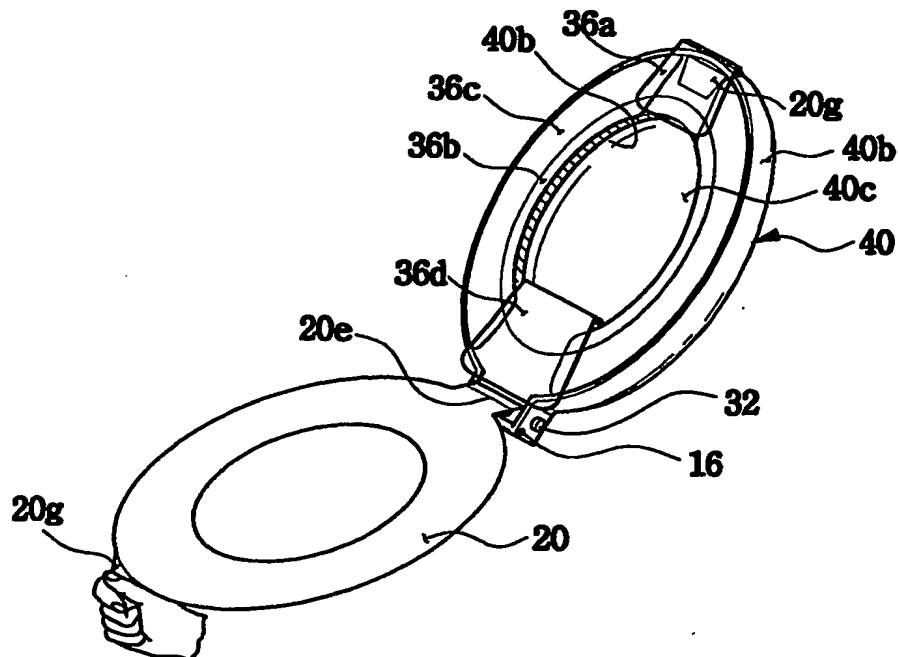
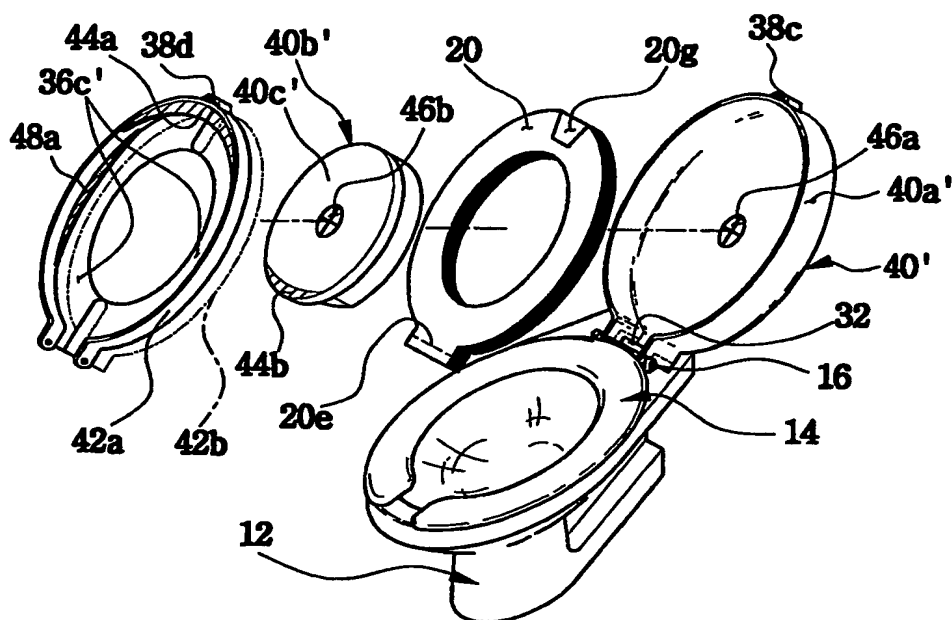
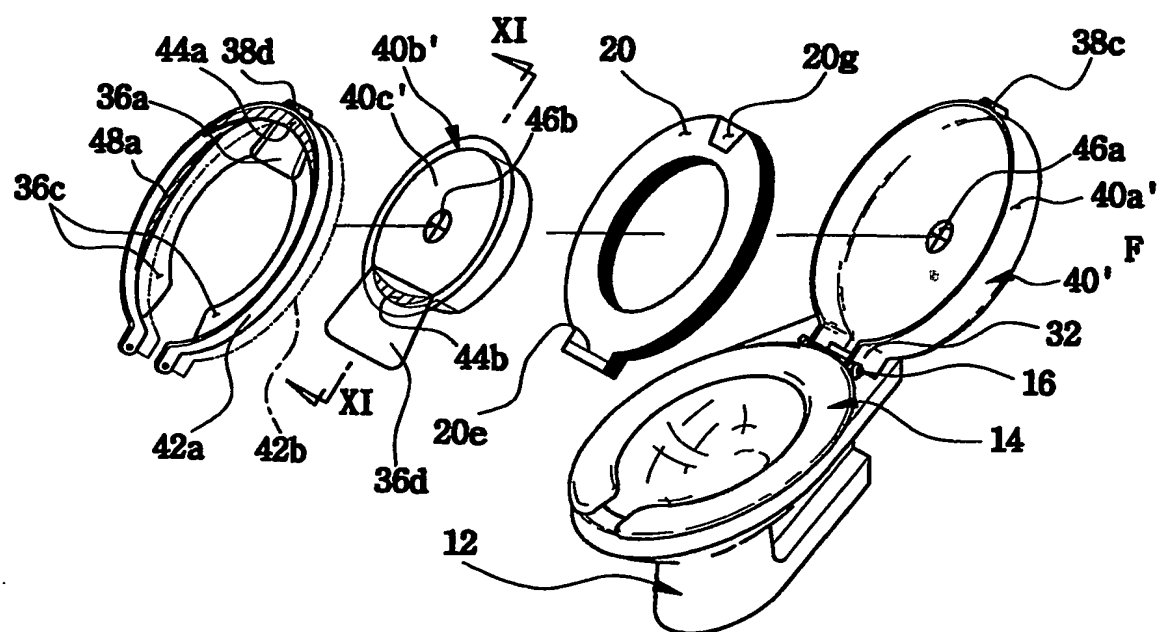


FIG.9**FIG.10**

7/11

FIG.11a

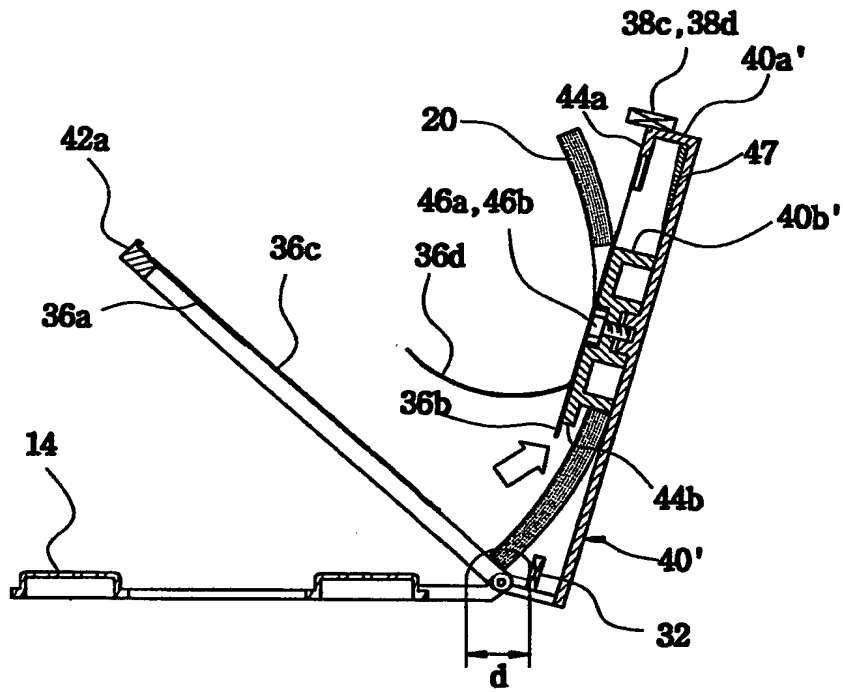
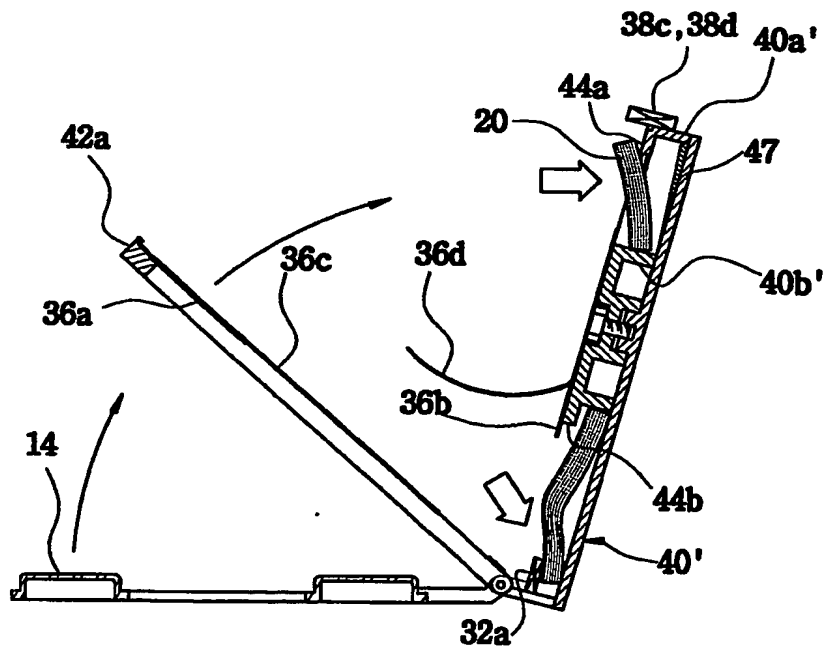


FIG.11b



8/11

FIG.11c

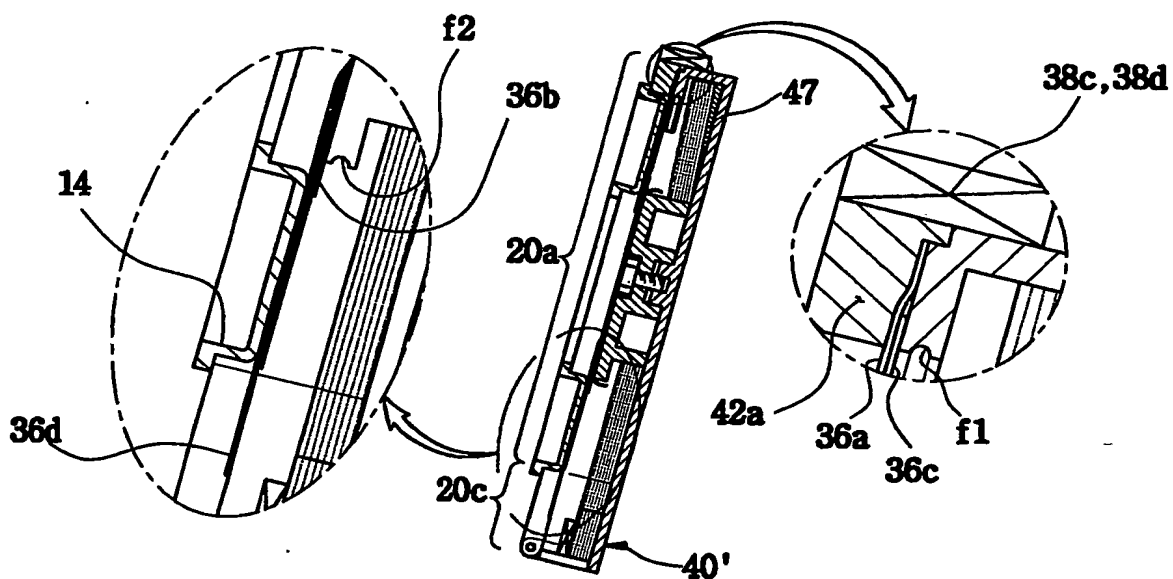
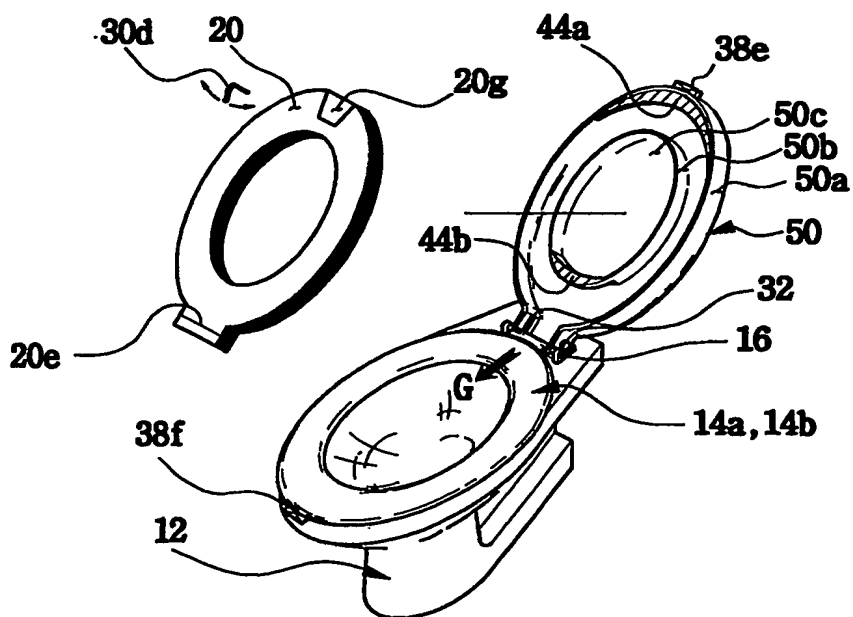


FIG.12



9/11

FIG.13

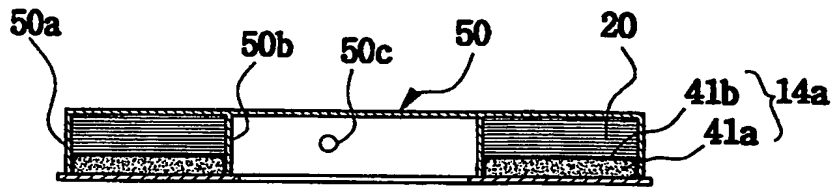


FIG.14

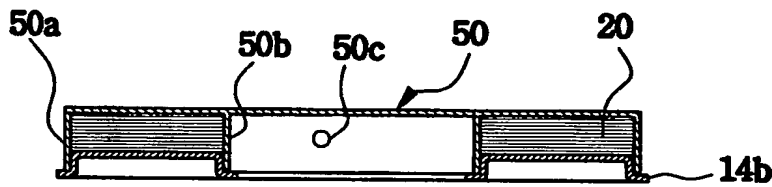
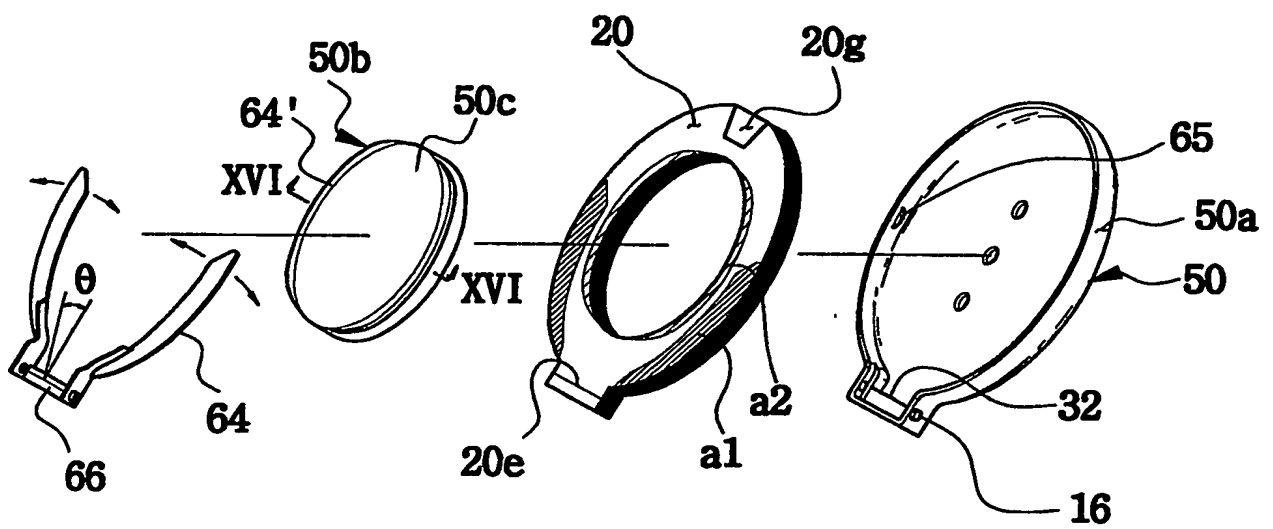


FIG.15



10/11

FIG. 16

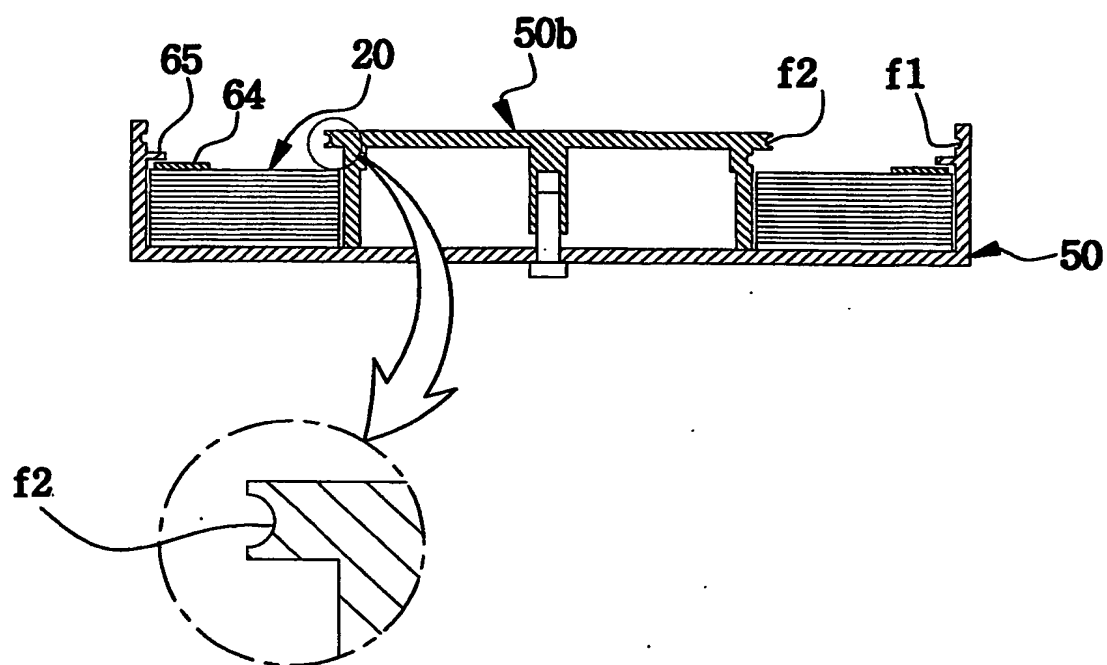
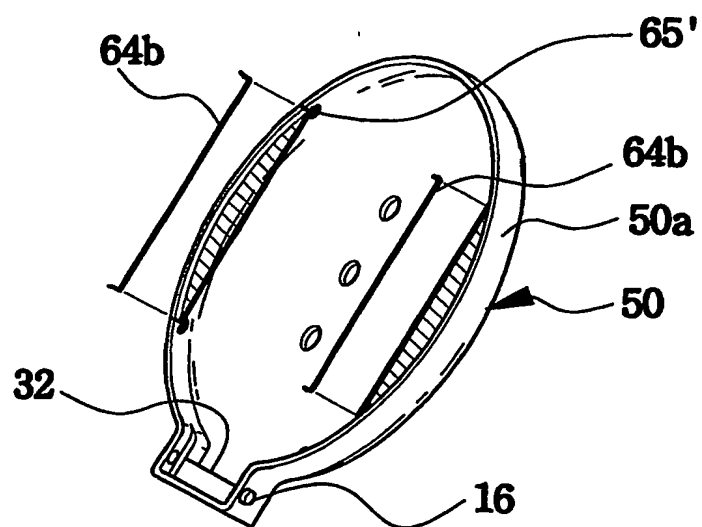


FIG. 17



11/11

FIG.18

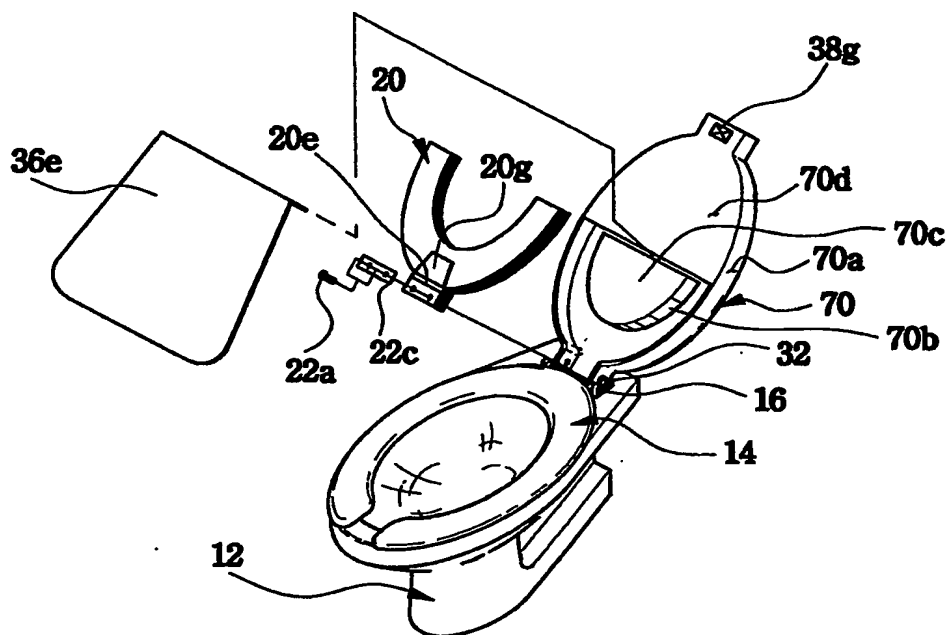
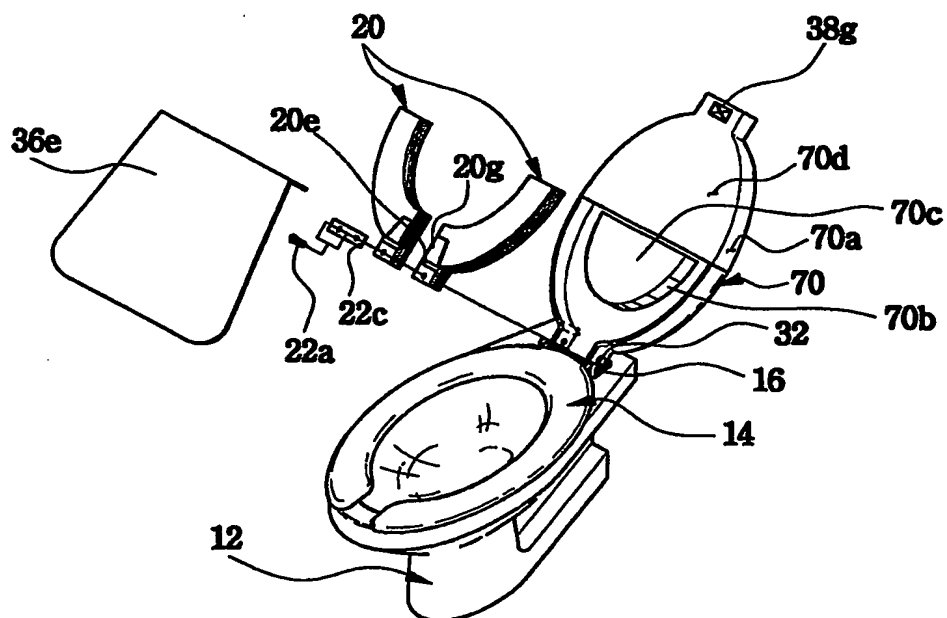


FIG.19



INTERNATIONAL SEARCH REPORT

International application No.
PCT/KR2004/001085**A. CLASSIFICATION OF SUBJECT MATTER****IPC7 A47K 13/14**

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC7 A47K13/14

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
KR, JP : IPC as above

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	D1---US 6212693 A (Joseph N D'Alco) 10 APRIL 2001 See the whole document	1
A	D2---US 5590424 A (Masahiro Matsunaga) 7 JANUARY 1997 See the whole document	1
A	D3---US 5172431 A (Glenn L.Rohde) 22 DECEMBER 1992 See the whole document	1
A	D4---US 4998297 A (Jeanie Summerville) 12 MARCH 1991 See the whole document	1
A	D5---US 4766618 A (Samuel J.Boker) 30 AUGUST 1988 See the whole document	1
A	D6---KR 2001-46977 A (YANG, SEUNG RYONG) 15 JUNE 2001 See the whole document	1
A	D7---KR 1987-12030 A (PARK, JANG SUNG) 3 AUGUST 1987 See the whole document	1

☐ Further documents are listed in the continuation of Box C.☒ See patent family annex.

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search

09 SEPTEMBER 2004 (09.09.2004)

Date of mailing of the international search report

15 SEPTEMBER 2004 (15.09.2004)

Name and mailing address of the ISA/KR

Korean Intellectual Property Office
920 Dunsan-dong, Seo-gu, Daejeon 302-701,
Republic of Korea

Facsimile No. 82-42-472-7140

Authorized officer

CHOI, Byoung Suk

Telephone No. 82-42-481-5797



INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.

PCT/KR2004/001085

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US4766618A(D5)	30.08.1988	AU587556B2	17.08.1989
		AU7518887A	11.01.1988
		BR8707337A	13.09.1988
		DK62688A	08.02.1988
		EP0269711A1	08.06.1988
		ES2005614A6	16.03.1989
		FI880545A	05.02.1988
		IL82713A	23.12.1990
		PT85030A	01.07.1988
		US4766618A	30.08.1988
		W08707492A1	17.12.1987
D1,D2,D3,D4,D6,D7		NONE	